Claims

1. Process for preparing an oxidant for the preparation of conductive polymers, characterized in that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger.

2. Process for preparing an oxidant according to Claim 1, characterized in that the ion exchanger used is an anion exchanger.

3. Process for preparing an oxidant according to Claim 1 or 2, characterized in that the ion exchanger used is a weakly basic anion exchanger.

4. Process for preparing an oxidant according to at least one of Claims 1 to 3, characterized in that the metal salt is a transition metal salt.

5. Process for preparing an oxidant according to Claim 4, characterized in that the transition metal salt is an iron(III) salt.

6. Process for preparing an oxidant according to at least one of Claims 1 to 5, characterized in that the radical of the organic acid is a radical of a sulphonic acid.

7. Process for preparing an oxidant according to at least one of Claims 1 to 6, characterized in that the transition metal salt is Fe(III) p-toluenesulphonate, Fe(III) o-toluenesulphonate or a mixture of Fe(III) p-toluenesulphonate and Fe(III) o-toluenesulphonate.

8. Process for preparing an oxidant according to at least one of Claims 1 to 7, characterized in that the process is carried out in the presence of one or more solvent(s).

9. Process for preparing an oxidant according to at least one of Claims 1 to 8, characterized in that the solvent or solvents used is/are one or more alcohol(s), water or a mixture of one or more alcohol(s) and water.

10. Process for preparing an oxidant according to at least one of Claims 1 to 9, characterized in that the alcohol(s) is/are butanol, ethanol or methanol.

11. Process for preparing an oxidant according to at least one of Claims 1 to 10, characterized in that the oxidant is separated from the solvent after treatment with the ion exchanger and is, if desired, redissolved in the same solvent or another solvent.

12. Oxidant obtainable by a process according to at least one of Claims 1 to 11.

13. Oxidant according to Claim 12, characterized in that it is present in solution and the solution has a water content of from 0 to 10% by weight based on the total weight of the solution.

14. Use of the oxidants according to Claim 12 or 13, as retarding oxidants in the oxidative polymerization of precursors for the preparation of conductive polymers.

15. Mixture comprising precursors for the preparation of conductive polymers and one or more oxidants according to the Claim 12 or 13 and, if desired, one or more solvents, characterized in that the formation of polymers in the mixtures is delayed.

16. Mixture according to Claim 15, characterized in that substituted or unsubstituted 3,4-ethylenedioxythiophene or derivatives thereof is/are used as precursors for the preparation of conductive polymers.

17. Mixture according to Claim 15 or 16, characterized in that it contains water.

18. Mixture according to at least one of Claims 15 to 17, characterized in that it contains counterions.

19. Mixture according to at least one of Claims 15 to 18, characterized in that it contains one or more binders, crosslinkers and/or additives.

20. Mixture comprising precursors for the preparation of conductive polymers and at least one oxidant, characterized in that the polymerization of the precursors has an activation energy of 75 kJ/mol or more.

21. Mixture according to Claim 20, characterized in that it contains substituted or unsubstituted 3,4-ethylenedioxythiophene or derivatives thereof as precursors for the preparation of conductive polymers.

22. Mixture according to Claim 20 or 21, characterized in that it contains a transition metal salt, preferably an iron(III) salt, as oxidant.

23. Process for producing an electrolytic capacitor, characterized in that a mixture according to at least one of Claims 15 to 22, if appropriate in the form of solutions, are applied to an oxide layer of a metal and are polymerized by chemical oxidation at temperatures of from –10°C to 250°C to form the corresponding polymers.

24. Process for producing an electrolytic capacitor, characterized in that precursors for the preparation of conductive polymers and oxidants according to Claim 12 or 13 are applied successively, if appropriate in the form of solutions, to an oxide layer of a metal and are polymerized by chemical oxidation at temperatures of from –10°C to 250°C to form the corresponding polymers.

25. Process according to Claim 23 or 24, characterized in that the oxidizable metal is a valve metal or a compound having comparable properties.

26. Process according to at least one of Claims 23 to 25, characterized in that the valve metal or the compound having comparable properties is tantalum, niobium, aluminium, titanium, zirconium, hafnium, vanadium, an alloy or compound of at least one of these metals with other elements, NbO or an alloy or compound of NbO with other elements.

27. Process for producing conductive layers, characterized in that a mixture according to at least one of Claims 15 to 22 is applied, if appropriate in the form of solutions, to a substrate and is polymerized on this substrate by chemical oxidation at temperatures of from –10°C to 250°C to form the corresponding conductive polymers.

28. Process for producing conductive layers, characterized in that precursors for the preparation of conductive polymers and oxidants as claimed in Claim 12 or 13 are applied successively, if appropriate in the form of solutions, to a substrate and are polymerized on this substrate by chemical oxidation at temperatures of from –10°C to 250°C to form the corresponding conductive polymers.

29. Process according to Claim 23 and 28, characterized in that counterions are added to the solutions.

30. Process according to at least one of Claims 23 to 29, characterized in that substituted or unsubstituted thiophenes, pyrroles, anilines or derivatives thereof are used as precursors for the preparation of conductive polymers.

31. Process according to Claim 30, characterized in that the substituted or unsubstituted thiophenes or derivatives thereof which are used are substituted or unsubstituted alkylene-3,4-dioxythiophenes or derivatives thereof.

32. Process according to Claim 31, wherein the substituted or unsubstituted alkylene-3,4-dioxythiopene used is 3,4-ethylenedioxythiophene.

33. Process according to at least one of Claims 23 to 32, characterized in that the solutions additionally contain one or more binders, crosslinkers and/or additives.

34. Process according to at least one of Claims 23 to 33, characterized in that the counterions are anions of monomeric or polymeric alkanesulphonic or cycloalkanesulphonic acids or aromatic sulphonic acids.

35. Process according to at least one of Claims 23 to 34, characterized in that the layer comprising the polymers (electrolyte layer) is washed with suitable solvents after the polymerization and, if appropriate, after drying to remove excess oxidant and residual salts.

36. Use of the oxidants according to Claim 12 or 13 for producing conductive layers or electrolytic capacitors.

37. Use of the mixture according to at least one of Claims 15 to 22 for producing conductive layers or electrolytic capacitors.